A. modeling with a computer program lithographic parameters to determine a desired laser spectrum needed to produce a desired lithographic result,

B. utilizing a fast responding tuning mechanism to adjust the center wavelength of laser pulses in a burst of pulses to achieve an integrated spectrum for the burst of pulses approximating the desired laser spectrum.

Please add new claims as follows:

13. (new) A microlithography light source comprising:

a gas discharge laser;

a fast responding tuning mechanism operative to adjust the center wavelength of laser pulses in a burst of pulses to achieve a multi-mode illumination spectrum in each pulse, whereby the light delivered by the light source enables illumination with two or more narrowband centerline wavelengths during a single illumination period.

14. (new) The apparatus of claim 13 further comprising:

the fast responding tuning mechanism comprises a tuning mirror controlled by a piezoelectric actuator.

15. (new) The apparatus of claim 13 further comprising:

the multi-mode illumination spectrum comprises two centerline wavelengths separated by a selected difference in centerline wavelength.

16. (new) The apparatus of claim 14 further comprising:

the multi-mode illumination spectrum comprises two centerline wavelengths separated by a selected difference in centerline wavelength.

17. (new) The apparatus of claim 13 further comprising:

the multimode illumination spectrum is selected to illuminate a plurality of focal planes in a photoresist.

18. (new) The apparatus of claim 14 further comprising:

the multimode illumination spectrum is selected to illuminate a plurality of focal planes in a photoresist.

19. (new) The apparatus of claim 15 further comprising:

the multimode illumination spectrum is selected to illuminate a plurality of focal planes in a photoresist.

20. (new) The apparatus of claim 16 further comprising:

the multimode illumination spectrum is selected to illuminate a plurality of focal planes in a photoresist.

21. (new) The apparatus of claim 17 further comprising:

the multimode illumination spectrum is selected to produce an aerial image that is the sum of the aerial images in a plurality of focal planes.

22. (new) The apparatus of claim 18 further comprising:

the multimode illumination spectrum is selected to produce an aerial image that is the sum of the aerial images in a plurality of focal planes.

23. (new) The apparatus of claim 19 further comprising:

the multimode illumination spectrum is selected to produce an aerial image that is the sum of the aerial images in a plurality of focal planes.

24. (new) The apparatus of claim 20 further comprising:

the multimode illumination spectrum is selected to produce an aerial image that is the sum of the aerial images in a plurality of focal planes.

25. (new) The apparatus of claim 21 further comprising:

the multi-mode spectrum is a summation of a first single mode spectrum having a selected bandwidth and a second single mode spectrum having a selected bandwidth with a 4 pm wavelength offset.

26. (new) The apparatus of claim 22 further comprising:

the multi-mode spectrum is a summation of a first single mode spectrum having a selected bandwidth and a second single mode spectrum having a selected bandwidth with a 4 pm wavelength offset.

27. (new) The apparatus of claim 23 further comprising:

the multi-mode spectrum is a summation of a first single mode spectrum having a selected bandwidth and a second single mode spectrum having a selected bandwidth with a 4 pm wavelength offset.

28. (new) The apparatus of claim 24 further comprising:

the multi-mode spectrum is a summation of a first single mode spectrum having a selected bandwidth and a second single mode spectrum having a selected bandwidth with a 4 pm wavelength offset.

29. (new) The apparatus of claim 21 further comprising:

a control mechanism operative to apply a voltage to the piezoelectric actuator;

wherein the voltage is selected such that, when filtered by the dynamics of the tuning mirror, it results in the multi-mode spectrum having bandwidths of the desired values.

30. (new) The apparatus of claim 22 further comprising:

a control mechanism operative to apply a voltage to the piezoelectric actuator;

wherein the voltage is selected such that, when filtered by the dynamics of the tuning mirror, it results in the multi-mode spectrum having bandwidths of the desired values.

31. (new) The apparatus of claim 23 further comprising:

a control mechanism operative to apply a voltage to the piezoelectric actuator;

wherein the voltage is selected such that, when filtered by the dynamics of the tuning mirror, it results in the multi-mode spectrum having bandwidths of the desired values.

32. (new) The apparatus of claim 24 further comprising:

a control mechanism operative to apply a voltage to the piezoelectric actuator;

wherein the voltage is selected such that, when filtered by the dynamics of the tuning mirror, it results in the multi-mode spectrum having bandwidths of the desired values.

33. (new) The apparatus of claim 29 further comprising:

the voltage to the piezoelectric actuator is modulated.

34. (new) The apparatus of claim 30 further comprising:

the voltage to the piezoelectric actuator is modulated.

35. (new) The apparatus of claim 31 further comprising:

the voltage to the piezoelectric actuator is modulated.

36. (new) The apparatus of claim 32 further comprising:

the voltage to the piezoelectric actuator is modulated.

IN THE SPECIFICATION:

Please amend the Specification as follows:

On page 11 please amend the third paragraph as follows:

"FIG. 2D presents plots of the resist feature widths of holes which have a target diameter of 200 nm as a function of depth of the holes. The figures are plotted for several doses

ranging from 17 J/cm^2 to 26 J/cm^2 in the monochromatic example and from 25 J/cm^2 to 32 J/cm^2 in the RELAX example. This ordinant is feature width and the absissa is labeled focus but actually represents the depth of the feature in microns with zero taken as the focal plane of the centerline wavelength. An "ideal" graph would be a straight line at 200 nm over a depth of at least 1.0 micron, with insignificant variation in width with exposure dose. The ~~FIG. 1D~~ FIG. 2C plots reveal that the RELAX simulation produces a set of plots much closer to the "ideal" graph than either the conventional or monochromatic example."